To Prevent Sulfa Residues in Hogs

United States Department of Agriculture
Food Safety and Inspection Service and
Extension Service

How To Prevent Sulfa Residues in Hogs

Sulfa Residues in Hog Carcasses

Since the 1950's, sulfa compounds have been used in rations fed to swine to help control such diseases as atrophic rhinitis, pneumonia, and dysentery. These sulfa compounds, especially in combination with antibiotics, have also been used extensively in starter and grower rations to promote growth.

Research shows the use of antibiotics in combination with sulfa in starter rations for young pigs can increase growth rate as well as feed efficiency. An estimated 70 to 80 percent of all hogs marketed in this country receive some form of sulfa during their lifetime.

But when violative levels of sulfa residues remain in hog carcasses, they pose potential health risks to consumers and lower public confidence in the safety of the meat supply. This, in turn, reduces demand for pork.

This brochure offers suggestions to help you continue using sulfa drugs safely so that you can avoid residue problems and prevent condemnation of carcasses at the meat plant. For additional information, contact your Extension agent, veterinarian, or pork producer's organization.

The Problem— A Little Goes A Long Way

A hog doesn't have to eat very much sulfa to have a violative level in its carcass. As little as one-quarter teaspoon of concentrated sulfamethazine in a ton of feed can produce a violative level in hog carcasses.

Many sulfa residue problems occur because traces of the drug manage to find their way into nonmedicated rations. Carryover of medicated feed in augers, mixers, storage bins, and other feed handling equipment can easily contaminate finishing feed. For example, as little as 20 pounds of medicated feed left in the boot of an auger can contaminate 1 ton of finishing feed.

Carryover of medicated feed left in equipment can easily contaminate finishing feed.

To avoid drug residue problems at the meat plant, hogs must be kept free of sulfas in the days before slaughter. That is, they can have no sulfa in their feed, water, or in other forms of medication, and their surroundings must be kept free of sulfa-containing manure or urine from hogs being given sulfa. This withdrawal period allows the drug to clear the hog's system. For sulfamethazine—the sulfa drug most commonly used in medicated feed—the withdrawal period is 15 days. Sulfathiazole has a 7-day withdrawal period. Read the label on the drug container.

Because of the pervasive nature of sulfa compounds, stringent quality control measures are needed at the feed mill and farm to prevent contamination of nonmedicated feed. Some farmers who turned up with violative levels of sulfa in their market hogs believed they were feeding a sulfa-free withdrawal ration. However, tests of feed and feed components showed significant sulfa contamination. Surveys of violative producers have shown that about 35 percent of supposedly nonmedicated finishing feed had sulfonamide levels high enough to cause residue problems in slaughter swine.

The new granular form of sulfa (shown in the top container) does not cling to equipment like the powdered form (shown in the bottom container), but precautions are still necessary.

New Granular Form of Sulfa

Powdered sulfamethazine clings to equipment. As a result, contamination can and will occur in feeders, mixers, wagons, and other equipment, where medicated feed has previously been handled.

A new granular form of sulfa helps prevent this problem. It is somewhat more expensive but can save money in the long run by avoiding residue problems and condemnation of hogs.

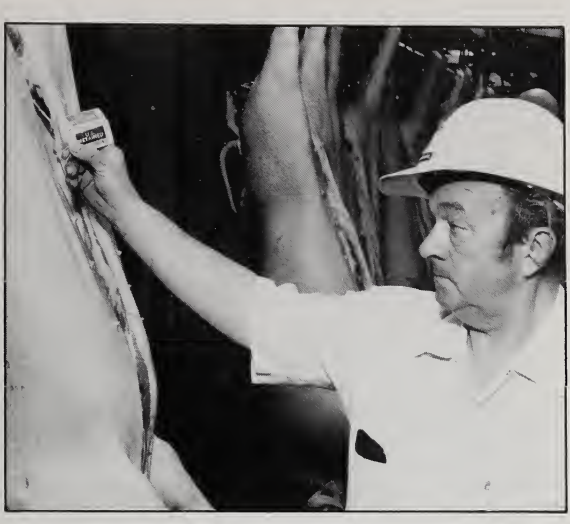
But even with granular sulfas, care must be taken to prevent carryover of the drug from medicated to unmedicated feed.

What Happens When Sulfa Residues Are Found?

As part of the inspection process, USDA meat inspectors routinely check hogs for sulfas. When sulfa violations are detected, hogs are condemned.

USDA and FDA notify producers and take action. For repeated or flagrant violations, the Federal Government can seek court actions, including injunctions and criminal prosecutions.

Testing in the plant makes it possible to detect most violations. Because testing may delay meat plant operations, meatpackers prefer to buy hogs from sources that consistently market residue-free hogs.



USDA inspectors have the authority to condemn pork for sulfa violations.

To avoid delays, farmers can test feed or animals on the farm. Farmers also can send a test group of hogs to slaughter. If no drug residues are found in the test animals, the rest of the herd can then be marketed.

How Do Sulfa Residues Occur?

- A farmer stops feeding sulfa, but in cleaning the equipment leaves some medicated feed in the mixer. The next batch of feed put into the mixer is given to market hogs. The hogs go to slaughter with violative levels of sulfa residues.
- Farmers take their own soybeans to the processor. After processing, the meal is taken to a local mill, run through a mixer, and bagged. Because the mixer was previously used with medicated feed, the farmer gets sulfa in the soybean oil meal.
- Hogs from a farmer's finishing pens break out and mingle with pigs on a medicated ration. Manure and urine from the younger pigs on medicated feed contain enough sulfa to produce (by recycling of contaminated manure) violative residues in the hogs being sent to slaughter.

How to Avoid Sulfa Residues

Identify hogs ready to go to slaughter and keep them separate from medicated hogs. . . . To prevent sulfa contamination from feed, water, or manure, it's best to physically separate hogs ready to be marketed from medicated animals and to use completely separate feeding and watering systems—

Identifying hogs makes it easier for farm workers to spot medicated animals and separate them from hogs ready for market.

including storage bins, pipelines, troughs, and waterers.

Keep records . . . . Don't rely on memory. It's best to limit the number of people handling medications. Accurate records will avoid overdosing when a new person is hired or substitutes take over.

Use only approved sulfa combination products for feed. . . . It is illegal to add sulfamethazine—powdered or granulated—to feed by itself. This can cause residue violations.

Make sure you're not buying a violation. . . . When you buy finishing-withdrawal feed or feed components, ask your supplier for assurance that it will not produce violative sulfa residues. (At the same time, be prepared to give assurances that your feeders, mixing equipment, etc. are not a source of contamination.)

Read labels and follow directions to prevent sulfa residues.

Save feed samples. . . . and code by lot numbers so they can be tested if the hogs you market have violative levels of sulfa residues.

Clean all storage areas. . . . This includes bulk feed storage bins as well as areas where bagged feed is stored. This is particularly important if the bin or area was previously used to store medicated feed. If possible, never use a bulk bin for both medicated and nonmedicated feeds.

Clean. . . .all feeding equipment. This includes feed wagons and mixer-grinders, as well as the feeders themselves. Scrape clean all areas of the feeders to eliminate feed buildup on wood or metal parts. If possible, flush feeders with a high-pressure hose before putting in nonmedicated finishing feed. Make sure no feed has collected inside augers and mixers. Check all cleanout ports on mixer-grinders. Use a large shop vacuum cleaner to remove residual feed in processing and conveying equipment. These "tailings" can be used in the next batch of medicated feed.

Clean . . . .watering systems. . . . if they have been dispensing sulfa. It's extremely difficult—sometimes impossible—to get rid of sulfa contamination. So, if possible, use a separate pipeline for market hogs. Do not use lagoon water to flush feeders or finishing feed floors.

Clean . . . .contaminated manure from finishing pens when you switch to a sulfa-free finishing ration. . . .and again 3 days later, since sulfa in the manure pack will continue to be recycled through hogs.

Follow label directions. . . . Don't rely on memory because label directions change frequently. Read the labels carefully and completely on all feeds so you know exactly what you are mixing in your feed. Use sulfa drugs in swine rations according to manufacturers' directions.

Don't overdose. . . .Don't exceed approved drug levels in feed.

Sequence and flush. . . . feed milling and transporting equipment. After mixing medicated feed, flush the system with several hundred pounds of cracked or ground grain. Remove flush materials from mixing equipment and store separately for future use in medicated feed. Mix withdrawal-finishing feeds last.

Withdraw sulfa at least 15 days before hogs are marketed. . . . Preferably, sulfa medicated feeds should not be used after market hogs reach 100-125 pounds—research shows it just doesn't pay. Get advice from your veterinarian if, because of a disease problem, you must feed sulfa after 125 pounds. Then try to use a less persistent sulfa compound. . . .and make sure you follow the withdrawal recommendations.

Test feed and animals. . . . for sulfa. Keep up to date so you can use new on-the-farm tests to check withdrawal rations for sulfa before using them on market hogs. Then, check blood or urine of hogs before marketing them.

Residue Avoidance is Good Business

Avoiding sulfa residues requires careful management, but it's good insurance against sulfa residue violations. Violations by a few farmers who do not take the steps needed to avoid residues cause problems for all hog producers.

Review your production practices, seek advice from your Extension agent and other experts, and encourage your neighbors to do the same. By marketing safe and wholesome pork you can help bolster the confidence of pork consumers throughout the world.

Other Materials Available from Your Extension Office

Feed Handling Systems
Prepared by Iowa State University

Feed Mixing Systems
Prepared by Iowa State University

Feed Additives and Residue Prevention in Swine
Prepared by Iowa State University

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